

# **Arnold Engineering Development Center**

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*Researching, Developing, and Testing America's  
Aerospace Technology*



## **AEDC Industry Meeting Overview**

**Arnold AFB TN**

**15 April 2002**

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*Integrity - Service - Excellence*



# Introductions



**AEDC**

## Agenda

## Introduction

## Agenda

## Schedule

## Mission

## Business Model

## Stakeholders Meeting

## RFI

## Tour

- **Mr. Alan Goldstayn - Executive Director**
- **CAPT Larry Judge - Vice Commander**
- **Mr. Ron Polce - Competition Program Manager**
- **Mr. Temple Bowling - Director, PK**
- **Mr. Bill Gray - Deputy Director, Support Directorate**
- **Mr. Jim Parker - Chief, Investment Division**
- **Mr. Al Simmons - Deputy, Base Civil Engineer**
- **Lt Col Robert Walker - Deputy, Investment Division**
- **Mr. Dan Fulmer - AFMC Acquisition Center of Excellence (ACE)**



# Introductions



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- **Mr. Rick Stewart - Deputy, AEDC Acquisition Center of Excellence (ACE)**
- **Ms. Karen Herget - Administrative Leader**
- **Mr. John Sutton - Chief, Contract Management (PCO)**

***Thank you for coming***



# Why We've Invited You



**AEDC**

## **Agenda**

### **Introduction**

### **Agenda**

### **Schedule**

### **Mission**

### **Business Model**

### **Stakeholders Meeting**

### **RFI**

### **Tour**

- **Informational briefings and tour designed to help you**
  - • • • •
  - **Better understand today's AEDC**
  - **Learn more about our requirements**
  - **Gain insight into our future**
- **Please ask questions**
  - **Today's answers may change as we develop our acquisition strategy**
- **Tour**
  - **Optional**
  - **May not enter the fenced area except on the tour**
- **Opportunity for you to network with other members of industry**



# Today's Agenda



**AEDC**

## Agenda

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Mission

Business  
Model

Stakeholders  
Meeting

RFI

Tour

- **AEDC Overview**  
**0810**
- **Stakeholders Conference Results**  
**0835**
- **Review Request for Information (RFI)**  
**0855**
- **Break/Prepare for Tour Departure**  
**0910**
- **Tour AEDC Mission Area**  
**0930**
- **Lunch**  
**1100**



# Today's Agenda



**AEDC**

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- **AEDC Recapitalization**  
**1315**
- **Reengineering**  
**1335**
- **Break (refreshments available)**  
**1400**
- **Transforming AEDC**  
**1415**
- **Closing Remarks**  
**1430**
- **Industry Networking**  
**1440 - 1700**



# Arnold Engineering Development Center



**AEDC**

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**CUSTOMERS**  
DoD, Industry,  
Federal,  
International

**2,507 People**

**63/27/14  
Test Cells**

**\$290M TOA**

**\$7 Billion  
Investment**

**White Oak Site  
Maryland**

**High Performance  
Organization**

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**AEDC**

# Current Status

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- **Present contracts expire 30 Sep 03**
- **Early in the acquisition cycle**
  - Team formed Jan 02
  - Risk assessment completed
- **Successful customer stakeholders meeting**
- **Market research underway**
  - One-on-one meetings
  - RFI released 14 Mar 02
  - Benchmarking with other major acquisitions





# Schedule



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## MILESTONE    DATE

**Team Formed    Jan 02**

**Risk Assessment Feb 02**

**Stakeholders Conference    Feb 02**

**Synopsis/RFI Released Mar 02**

**Technical Information Exchanges    Apr 02**

**AEDC Industry Meeting    Apr 02**

**Competition Library    Opens    Apr 02**

**Release Draft RFP    NLT Aug 02**

**Release RFP    NLT Jan 03**

**Contract Award    Jul 03**

**Phase In    Aug 03**

**Contract Execution    Oct 03**



# Early Technical Information Exchanges



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- **Requested by industry**
  - **Better understand current processes**
  - **Reduce your uncertainty about our requirements**
  - **Enhance competition and proposals**
- **First time we've allowed access**
- **Meet with designated Government experts on an informal basis**
- **Visits allowed from 1 April to 15 May 2002**
- **Helps mitigate high risk elements**



# Competition Library



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- **Electronic Access**

- **Linked to AEDC Homepage & password protected**
- **Significant information about all aspects of AEDC's operations**
- **Referenced resources will be available**
- **Air Force Forms and Publications**
  - **<http://afpubs/hq.af.mil/>**

- **On-site Access**

- **Documents that cannot be made available through electronic access**



# Mission



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Provide the nation with capabilities, the warfighters with tools and the SPO/other test centers with knowledge

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Effects-based acquisition:  
Having the right tool, at the right place, at the right time



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# Purpose

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- **We're committed to seeking the most effective, productive and efficient arrangement for management, operations and maintenance of this national asset**
- **We have a major window of opportunity to transform and make significant improvements**

*Potential \$3 Billion, 10- to 15-year effort*



# AEDC T&E Expertise



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# Aeropropulsion Test Capability



**AEDC**

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## ENGINE PERFORMANCE & OPERABILITY

- Vectored Exhaust Collection Systems/Afterburners
- Near “Real Time” Data Processing Capabilities
- Rapid Throttle Transients/Stall Margin
- Aeromechanical Stress Measurement
- Multi-Axis Thrust Measurement

## ENGINE/INLET INTEGRATION

- Inlet Distortion Generation System
- Extremely Hot/Cold Inlet Temperatures
- High Air Flow Capability



# Aeropropulsion Test Capability (cont'd)



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## ENVIRONMENTAL/CLIMATIC

- Engine Icing
- Sand/Dust Ingestion
- Corrosion
- Hydrocarbon Emissions

## GROUND POWER COMBUSTION

- Combustor segments
- Combustion stability
- Emissions testing





# Aerodynamic Test Capability



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## HIGH PERFORMANCE FLIGHT SIMULATION

**Large Scale/Full Scale Flight Simulation ( $0.2 < M_{\infty}$ )**

- Force & Moment / Pressure Testing
- Integrated Engine/Inlet/Exhaust/Plume Sign Test
- Pressure Sensitive Paint

**Transonic & Supersonic High Angle of Attack**

## STORE SEPARATION SIMULATIONS

**Trajectory Predictions ( $0.2 < M_{\infty} < 5$ )**

**Captive Loads Data (Wing/Pylon/Bay)**

**Ballistic Impact Predictions**

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## CFD & ENGINEERING APPROXIMATIONS

**Inlet Integration Modeling**

**Air Vehicle Performance Predictions**

**Support Interference Predictions**

**Control Surface Effectiveness Predictions**

**Flow Fields Around Highly Complex Configurations**

**Integration of CFD With Wind Tunnel Results (IT&E)**



# Space and Missile Test Capability



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## **SIGNATURES**

**Advanced Missile Signature Center  
Analysis, Modeling, Archival, Distribution  
EO-IR / Diagnostics Field Test Team**

## **HYPERSONICS / REENTRY**

**Extremely High Pressure/Temperature  
High Mach Numbers (7-16.5)  
Large Scale and Long Run Times  
Soft Model Launch, and Recovery  
High Speed Large Model Launch  
Counter Fire at Velocities up to 14 km/sec**

## **ROCKETS**

**Altitude Simulation Up To 100K  
FT  
High Thrust Measurements  
(500K LBF)  
Large Solid and Liquid Rockets  
Large Nozzle Area Ratios**

## **NUCLEAR WEAPONS EFFECTS**

**Decade Quad Source  
16 Krad over 2250 cm<sup>2</sup>  
10 Terawatts of Power**



# Rocket Propulsion Test Facilities



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## **J-6 - Solid Rocket Motor Test Cell**

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**J-5**

**J-3**

**J-4 - Liquid Rocket  
Engine Test Cell**



# Hypersonic Test Facilities



**Arc Heaters**

**Tunnel 9**

**Ranges**

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**Aerodynamic and  
Propulsion Test Unit**

**Tunnels B/C**



# Space Test Facilities



**Mark I Chamber**

**Direct Write  
Scene Generator**

**7V Sensor  
Chamber**

**12V Chamber**

**10V Sensor Chamber**

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# Nuclear Weapons Effects Capabilities



- **World Class Radiation Test Facilities**
  - Hot and Cold X-Rays for Component, Subsystem, and System Tests
  - MBS for Small Component Tests
  - Future (FY04) - Simultaneous Multiple Radiation Sources with HWIL Capability

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# AEDC Signatures Capabilities



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## Threat, Target, Battlespace Environment Signatures

- ★ **Measurement & Diagnostics Instrumentation**
  - Includes Development and Calibration Capabilities
    - On and off-site
- ★ **Analysis and Prediction Tools**
- ★ **Data Archival and Distribution Including Networks**

### Targets:

- **Cruise Missile**
- **Space**
- **Strategic Missile**
- **Rotorcraft / Aircraft**
- **Tactical Missile**
- **Theater Missile**

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### Backgrounds:

- **Celestial**
- **Earth Limb**
- **Terrestrial**
- **Tactical False Alarms**



# Civil Engineering Services



## *Key Products/Services...*

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- Custodial Services
- Refuse Collection
- Fire Protection
- Emergency Management





# Bldgs, Roads & Grounds Assets



**AEDC**

## ***Key Products/Services***

**. . .**

- **Project Management**
- **Design Engineering**
- **Facilities Maintenance**
- **Roads & Grounds**

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# Utilities Asset



## *Key Products/Services*

. . .

- Electrical Operations
  - Mechanical Operations
  - Fuel Operations
  - Operations Center
  - Systems Engineering
- Mechanical Ops**

**Electrical Ops**

**Fuel Ops**

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# Environmental, Safety, Health, & Quality Services



**AEDC**

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## ***Key Products/Services...***

- **Haz Waste Management**
- **Environmental Compliance**
  - **Monitoring**
  - **Sampling**
  - **Analysis**
  - **Reporting**
  - **Restoration**
- **Conservation**
- **Safety & Risk Management**
- **Quality Assurance**
- **Occupational Health**
- **Wellness Program**
- **Industrial Hygiene**



# Base Services



## ***Key Products/Services...***

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- **Security Forces**
- **Transportation**
- **Food Services**



# Laboratory Assets



**AEDC**

## ***Key Products/Services...***

**PMEL**

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**Chemical Lab**



# Material Management Services



## ***Key Products/Services...***

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- **Commodity Management**
- **Distribution Management**
- **Inventory Storage & Management**
- **Traffic Freight Management**



# Management Structure

AEDC

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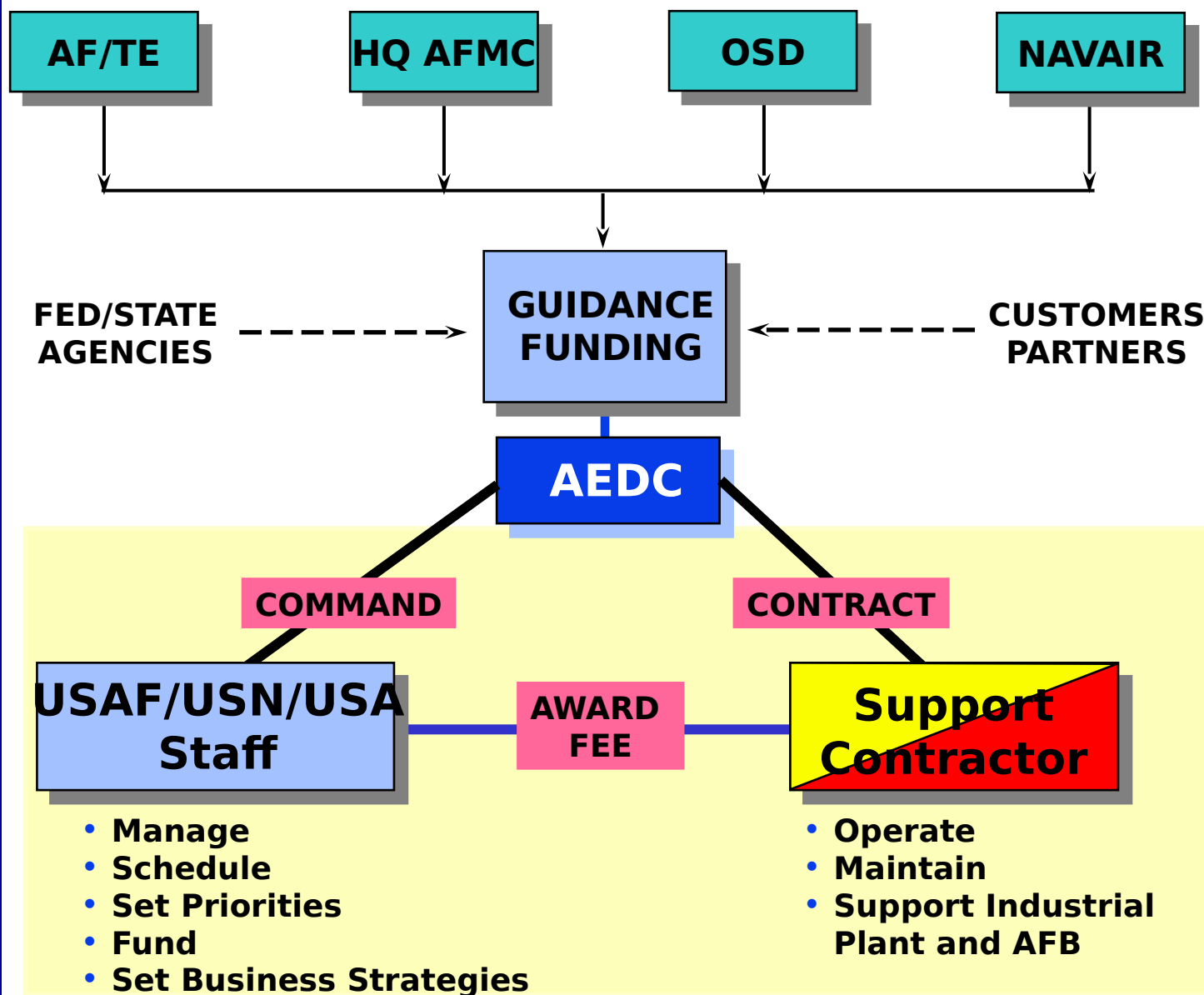
Mission

Business Model

Stakeholders Meeting

RFI

Tour





# Business Model and History



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- **Center Concept of Operation**
  - Government management and direction (10 percent of people)
  - Contractor testing and support (90 percent of people)
- **Contract History**
  - 1949 - Unitary Wind Tunnel Plan Act established AEDC
  - 1950 - 1977 - Sole source to ARO, Inc. (CPFF,CPIF,CPAF)
  - 1980, 1985, 1990 - Competitive Selection of 3 contractors (CPAF)
  - 1995 - Competitive selection of 2 contractors (CPAF)
    - Test Support - Sverdrup Technology
    - Center Support - ACS (Joint Venture: CSC, DynCorp, Gen Physics)





# Present Support Contracts



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- **Competitive - Two contract efforts (Test & Support)**
  - Five-year contracts; with single 3-year option
  - Total contracts price (8-year) - \$1.8B
  - Adjusted annually to match workload
- **Performance-based Cost-Plus-Award Fee contracts**
  - AFMC/CV is the Fee Determining Official (FDO)
  - Six month award fee periods
- **Contract Resources**
  - Labor - 78 percent
  - Materials, services, taxes & other - 18 percent
  - Award fee - 4 to 5 percent (zero base fee)



# Roles & Responsibilities



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*(Current Contract Structure)*

## Government

## Test Support

## Center Support



- Strategic & programmatic direction
- What and when AEDC tests
- Interface with customers
- Workload
- Budgeting, prioritization & allocation of funds
- Contractor

**293 People**

- Test engineering
  - Wind Tunnels
  - Turbines
  - Rockets
  - Arc Heaters
  - Ranges
  - Chambers
- Test Technology
- Facility O&M
- Instrumentation
- Plant O&M

**1300 People**

- Central computer
- Base support & maintenance
- Photo/Chem Lab
- PMEL
- Environmental
- Utilities
- Logistics
- Transportation
- Base security

**914 People**

- Purchasing



**AEDC**

# Our People

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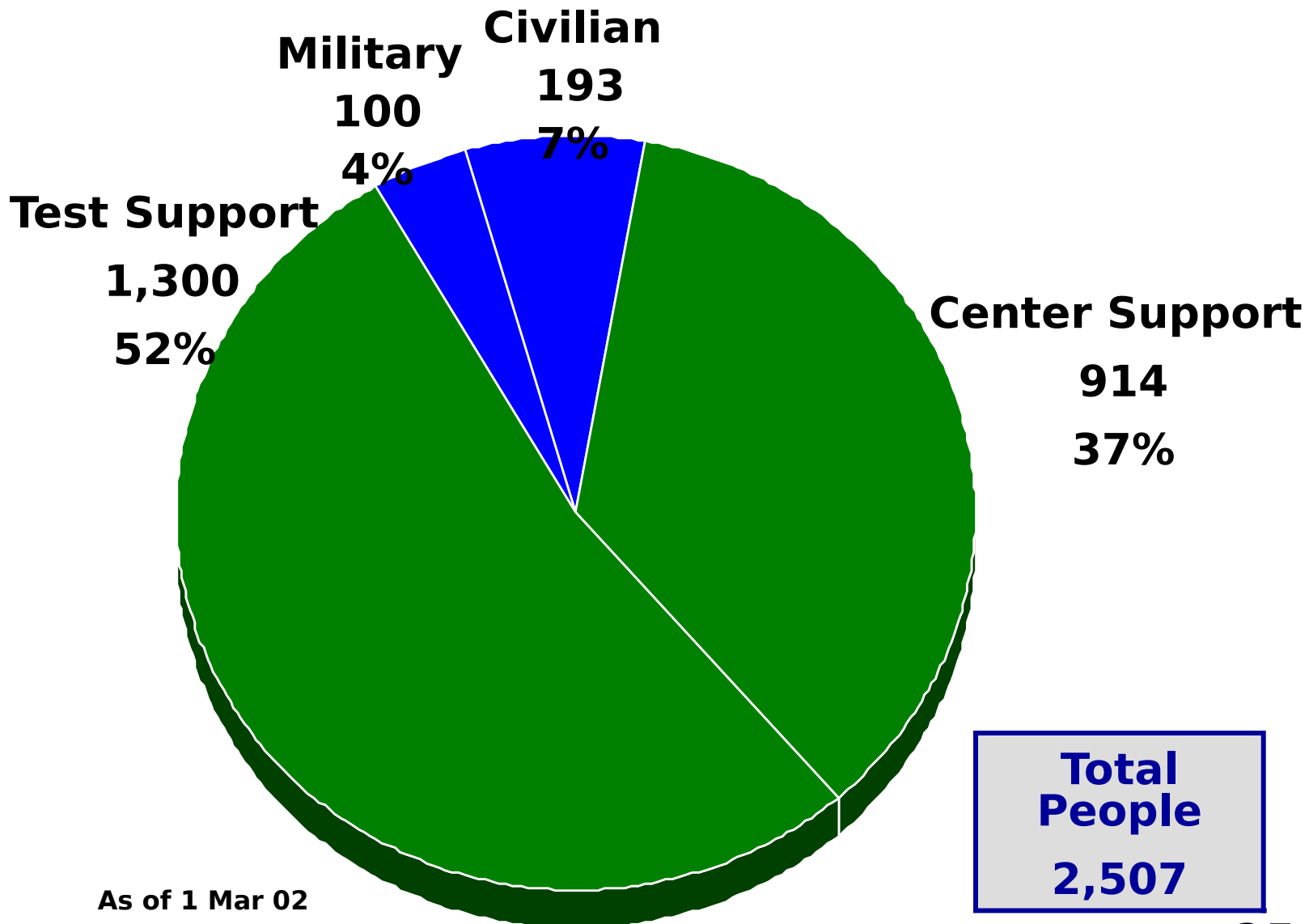
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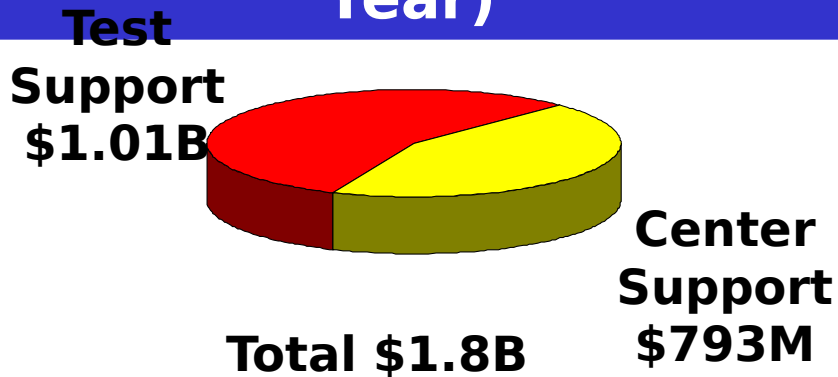




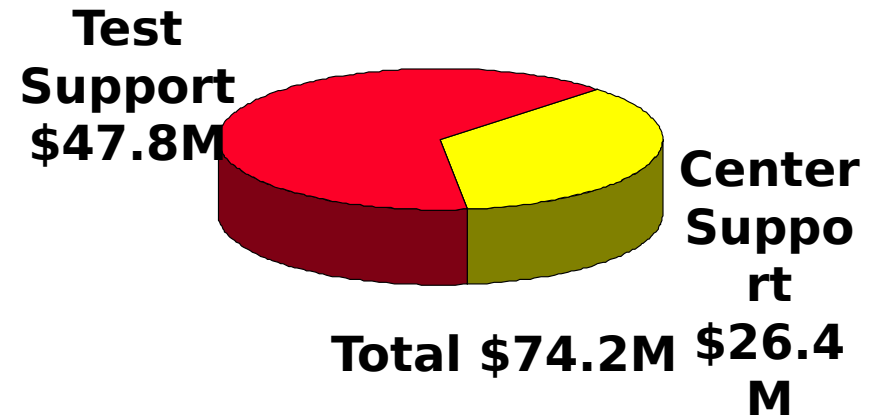
# Contract Data



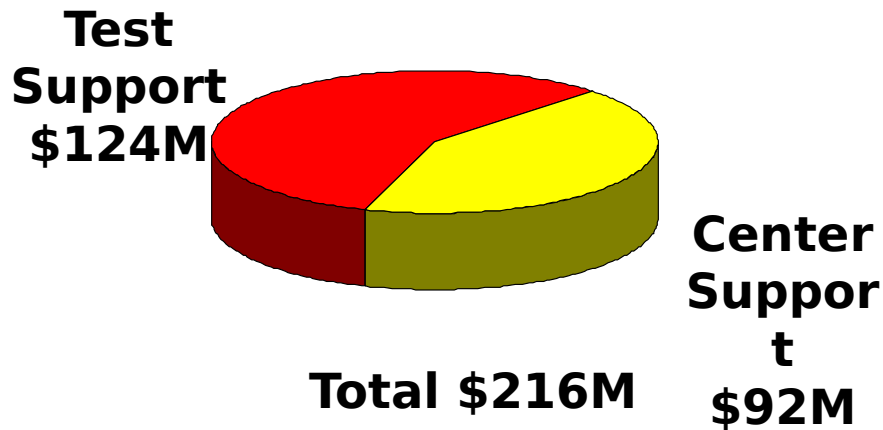
## Total Contract Price (8-Year)



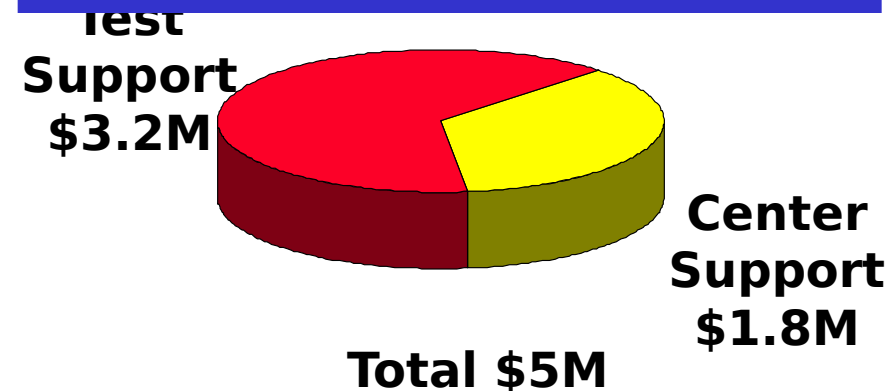
## Total Award Fee Pools



## FY 02 Estimated Costs



## 13th Period Award Fee Pools





# Numbers That Define AEDC

## Cost of Operations: FY02 TOA = \$290.3M



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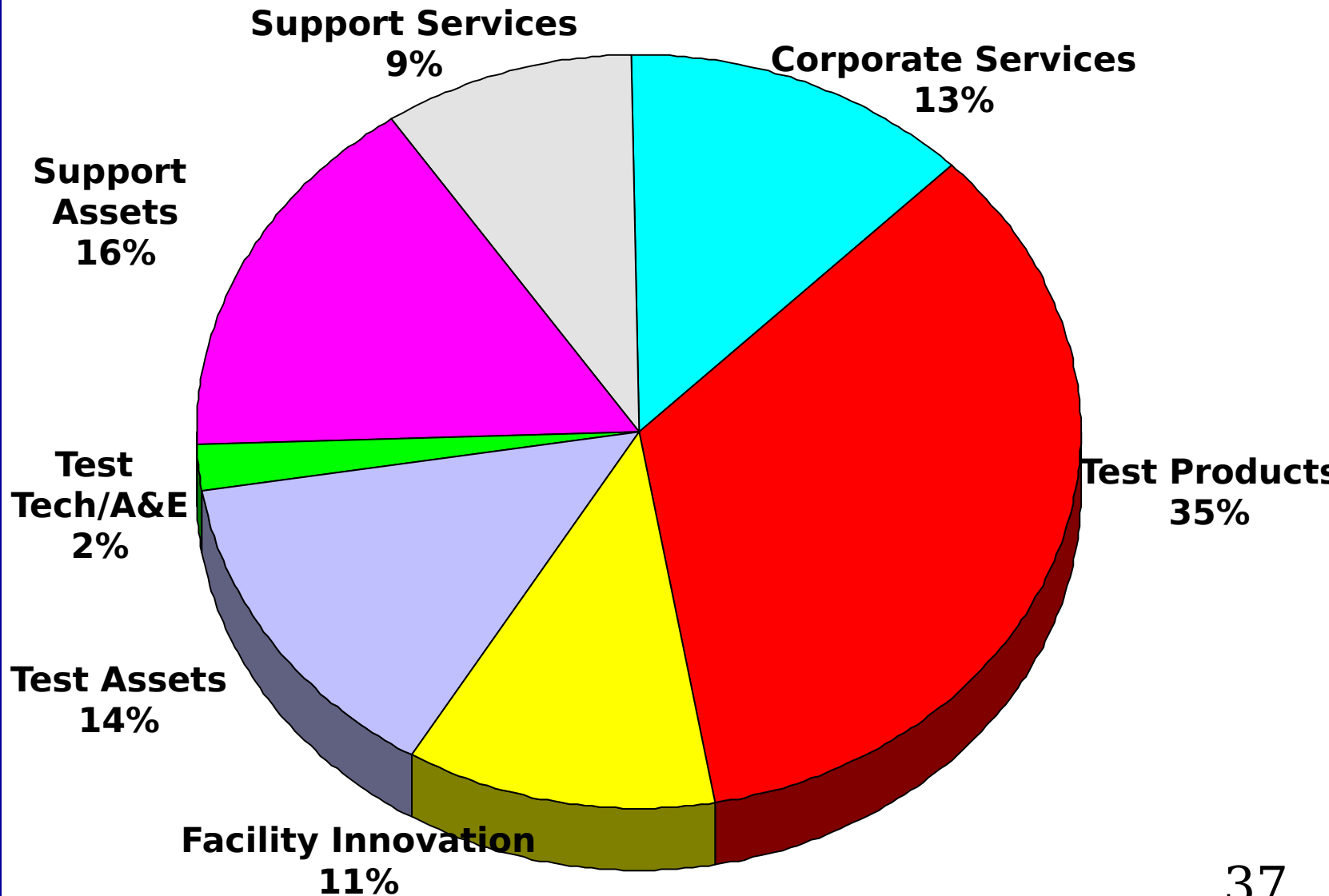
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# Numbers That Define AEDC

## Funding Sources: FY02 TOA = \$290.3M



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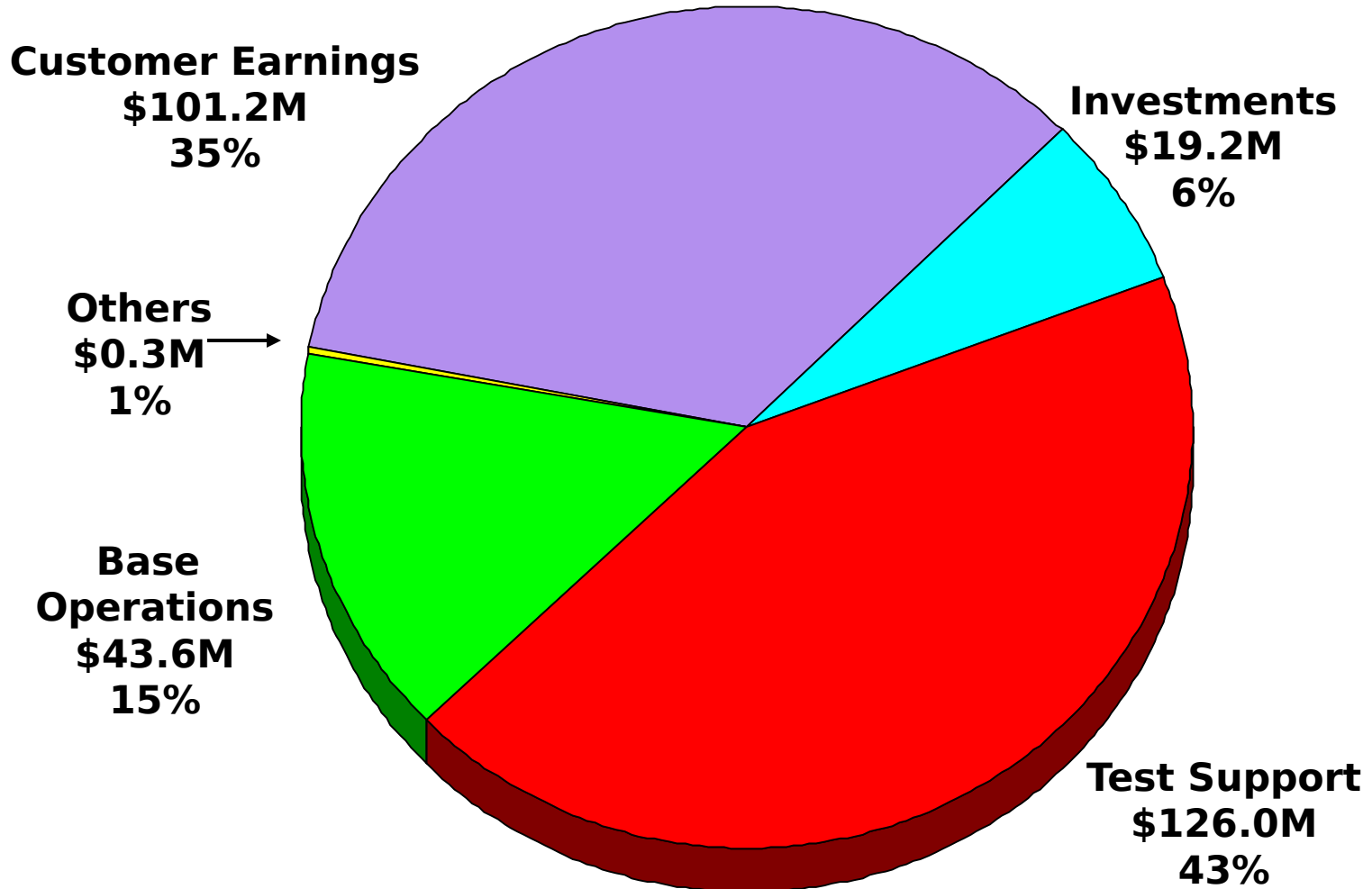
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# Numbers That Define AEDC

## FY02 Customer Earnings = \$101.2M



AEDC

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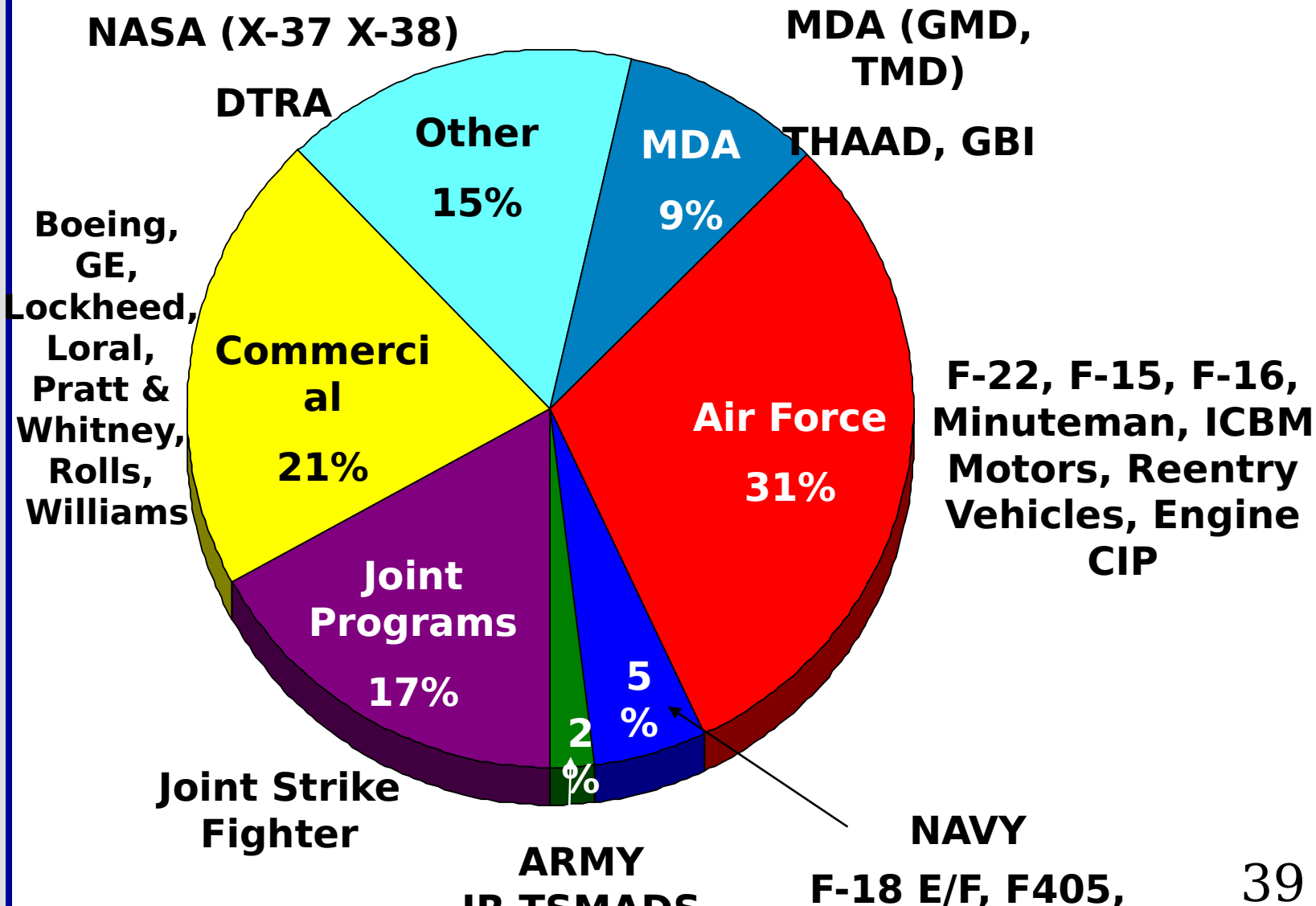
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# Future Budget & Workload Estimates



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- **Constantly changing**
- **Direct Budget Authority (DBA) - *Institutional***
  - Test Support - \$126,000 in FY 02 (increase at rate of inflation)
  - Maintenance & Repair (M&R) Plus Up - \$0 in FY 02; \$13 - 17M FY 03 & 04; increases significantly to \$50M level in FY 05-07
  - Improvement & Modernization (I&M) - \$19M in FY02; ranges from \$15 - 18M through FY 07
  - BOS - \$42M in FY 02; ranges from \$50 - 56M through FY 07
- **Reimbursable Budget Authority (RBA) - *Earnings***
  - \$97M in FY 02
  - Dips in FY 03 to \$87M
  - Potentially increases to \$120M+ level in outyears





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- **AEDC Overview**

**0810**

## **Stakeholders Conference Results**

**0835**

- **Review Request for Information (RFI)**

**0855**

- **Break/Prepare for Tour Departure**

**0910**

- **Tour AEDC Mission Area**

**0930**

- **Lunch**

**1100**